

C L A I M S

1. A film formation method comprising a preparation stage and a process stage,

the preparation stage comprising

5 a first film formation step of forming films, while using different process times,

a first measurement step of measuring film thickness of the films formed in the first film formation step,

10 a first derivation step of deriving, based on measured data obtained in the first measurement step, a first relational equation that expresses a relationship between film thickness and process time,

a second film formation step of forming films, while controlling process gas pressure with reference to different values of atmospheric pressure,

15 a second measurement step of measuring film thickness of the films formed in the second film formation step,

20 a second derivation step of deriving, based on measured data obtained in the second measurement step, a second relational equation that expresses a relationship between atmospheric pressure and film thickness, and

25 a third derivation step of deriving, based on the first and second relational equations derived in the first and second derivation steps, a process time

correction equation prepared to correct process time in accordance with atmospheric pressure fluctuations, and the process stage comprising

a correction step of correcting process time,
5 based on a measurement result of current atmospheric pressure and the process time correction equation derived in the third derivation step, and

a film formation step of forming a film, while controlling process gas pressure with reference to
10 atmospheric pressure, based on process time corrected in the correction step.

2. The method according to claim 1, wherein the third derivation step comprises

a relational equation derivation step of deriving,
15 based on the first and second relational equations, a third relational equation that expresses a relationship between atmospheric pressure and process time, and

a correction equation derivation step of deriving the process time correction equation, based on the
20 third relational equation derived in the relational equation derivation step.

3. The method according to claim 1, wherein at least one of the first and second relational equations is formed of a linear approximation equation.

25 4. A film formation process time correction equation derivation method of deriving a process time correction equation prepared to correct process time in

accordance with atmospheric pressure fluctuations, in performing film formation while controlling process gas pressure with reference to atmospheric pressure, the method comprising:

5 a first derivation step of deriving, based on first measured data, a first relational equation that expresses a relationship between film thickness and process time;

 a second derivation step of deriving, based on
10 second measured data, a second relational equation that expresses a relationship between atmospheric pressure and film thickness; and

 a third derivation step of deriving, based on the first and second relational equations derived in the
15 first and second derivation steps, a process time correction equation prepared to correct process time in accordance with atmospheric pressure fluctuations.

5. The method according to claim 4, wherein the third derivation step comprises:

20 a relational equation derivation step of deriving, based on the first and second relational equations, a third relational equation that expresses a relationship between atmospheric pressure and process time; and

 a correction equation derivation step of deriving
25 the process time correction equation, based on the third relational equation derived in the relational equation derivation step.

6. The method according to claim 4, wherein at least one of the first and second relational equations is formed of a linear approximation equation.

7. A film formation apparatus comprising:

5 a process chamber configured to place a substrate therein;

a gas supply system configured to supply a reactive gas into the process chamber;

10 an atmospheric pressure measuring device configured to measure atmospheric pressure;

a storage section configured to store a process time correction equation prepared to correct process time in accordance with atmospheric pressure fluctuations;

15 a process time correction section configured to correct process time, based on the process time correction equation stored in the storage section; and

20 a control section configured to control the gas supply system, based on a measurement result obtained by the atmospheric pressure measuring device and process time corrected by the process time correction section.

8. The apparatus according to claim 7, wherein the storage section stores a plurality of the process time correction equations prepared respectively for a plurality of film formation process conditions, and
25 the film formation apparatus further comprises

a correction equation choosing section configured to choose a process time correction equation from the plurality of process time correction equations, which corresponds to a predetermined film formation process condition.

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9. A medium storing a program to cause a computer to execute a film formation process time correction equation derivation method according to any one of claims 4 to 6.